

## Definitions and Concepts for WJEC (Eduqas) Biology GCSE

### Topic 4: Coordination and Control

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*Definitions in **bold** are for higher tier only*

*Definitions marked by '\*' are for separate sciences only*

**ADH** - A hormone secreted by the pituitary gland which increases water reabsorption in the kidney (making the kidney tubules more permeable to water).

**Adrenal gland** - A gland located above the kidneys which releases the hormone adrenaline.

**Adrenaline** - A hormone released by the adrenal gland which is involved in the 'fight-or-flight' response. It elevates the heart rate, breathing rate, blood flow to muscles and increases blood sugar levels by increasing the conversion of glycogen into glucose.

**Aorta** - The main artery that takes oxygenated blood away from the heart to the body.

**Arteriole** - A small blood vessel that connects the arteries to the capillaries.

**Auxin** - A plant hormone that is responsible for cell elongation.

**Bladder** - The organ that stores urine before it is excreted.

**Blind spot** - A small portion of the eye that doesn't contain light receptor cells.

**Blood** - A tissue that contains red blood cells, white blood cells, plasma and platelets.

**Capillary knot** - Also called the glomerulus, the capillary knot is part of the nephron. It is surrounded by Bowman's capsule and receives blood from an arteriole. The blood is filtered here under pressure and the filtrate moves into Bowman's capsule.

**Cataract** - When the lens of the eye becomes cloudy due to protein build up.

**Central nervous system (CNS)** - The brain and the spinal cord.

**Cerebral cortex** - The outer layer of the cerebrum.

**Cerebellum** - The region of the brain that controls unconscious functions such as posture, balance and muscular movement.

**Cerebrum** - The highly folded region of the brain that is responsible for controlling voluntary actions such as learning, personality and memory. It is divided into the right and left hemispheres.

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**Choroid** - A thin layer between the retina and sclera which has many blood vessels and allows oxygen into the retina cells.

**Collecting duct** - Where urine passes down into the ureter and it is the site of selective reabsorption of water.

**Contraception** - Methods that are used to prevent pregnancy.

**Cornea** - The front part of the eye that refracts light as it enters, focusing it onto the retina.

**Dormancy** - A period of time where the seeds hibernate. This stops when they germinate.

**Effector** - A gland or muscle that produces a response to the stimulus to restore optimum conditions.

**Erector muscle** - A muscle in the skin that contracts when the body is too cold. This raises the hairs on the skin, trapping a layer of air next to the skin, which acts as an insulator.

**Ethene** - A plant hormone that promotes fruit ripening.

**Follicle stimulating hormone (FSH)** - A female reproductive hormone that is released by the pituitary gland. It is responsible for the maturation of an egg in the ovary.

**Fovea** - A portion in the middle of the retina which produces the clearest image as it has a large proportion of cone cells.

**Gibberellins** - Plant hormones that initiate germination and flowering.

**Glucagon** - A hormone produced by the pancreas which works with insulin to control blood sugar levels. It increases blood glucose concentration by converting glycogen into glucose.

**Glucose** - A type of carbohydrate (simple sugar) which is used in respiration to produce energy in the form of ATP.

**Glycogen** - A form of glucose which is stored in the body.

**Gravitropism** - The growth response of a plant to gravity.

**Homeostasis** - The maintenance of a stable internal environment in the body despite fluctuations in internal and external conditions.

**Hormone** - A chemical messenger secreted by the endocrine glands into the bloodstream and transported to receptors on target organs.

**Hypothalamus** - The part of the brain that regulates temperature and the water balance of the body. It also produces hormones.

**Infertility** - The inability to reproduce after 12 months or more of unprotected sex.



**Insulin** - A hormone produced by the pancreas which controls the body's blood sugar levels. It works to decrease glucose levels by increasing uptake of glucose into cells, and allowing the liver to convert glucose into glycogen for storage.

**In vitro fertilisation (IVF)** - The fertilisation of an egg using sperm outside of the body. **IVF is used when a couple are having difficulty conceiving.**

**Iris** - The part of the eye that contracts or relaxes, changing the diameter of the pupil, to control the amount of light entering the eye.

**Kidney** - The organ in the body that maintains water balance and produces urine.

**Kidney cortex** - The outer region of the kidney which contains the nephrons.

**Lens** - A part of the eye that further refracts light to focus it onto the retina.

**Long-sightedness (hyperopia)** - A defect of the eye where near objects appear out of focus due to the convergence of light rays behind the retina.

**Luteinising hormone (LH)** - A female reproductive hormone released by the pituitary gland that stimulates the release of an egg.

**Medulla oblongata** - The part of the brain responsible for non-voluntary movement such as breathing rate and heart rate.

**Menstrual cycle** - The monthly cycle in women that involves the development of the uterus lining, ovulation, maintenance of the uterus lining and its shedding.

**Motor neurone** - The neurone that transmits impulses from the relay neurone to the effector to produce a response.

**Negative feedback system** - A system which works to reverse the initial stimulus to maintain an optimum level.

**Nephron** - The unit of the kidney where filtration takes place.

**Oestrogen** - A female sex hormone produced in the ovaries that controls the development of secondary sexual characteristics. In the menstrual cycle, it repairs the uterus lining and inhibits the release of FSH.

**Optic nerve** - The nerve that carries impulses from the eye to the brain.

**Osmoreceptors** - **Receptors that detect a change in osmotic pressure.**

**Osmosis** - The net movement of water molecules from a region of high water concentration to a region of low water concentration across a partially permeable membrane.

**Osmotic lysis** - When water moves into an animal cell causing it to burst.

**Osmotic shrinking** - When water moves out of an animal cell causing the cell to shrink.



**Ovaries** - Glands of the female reproductive system which contain egg cells. Ovaries produce the hormones oestrogen and progesterone.

**Pancreas** - A gland found behind the stomach. It releases the hormones insulin and glucagon into the blood, and digestive enzymes into the small intestine.

**Phototropism** - The growth response of a plant to unilateral light.

**Pituitary gland** - The gland that stores and releases hormones which regulate many bodily functions. It is located at the base of the brain.

**Progesterone** - The hormone that maintains the uterus lining during the later stages of the menstrual cycle and pregnancy.

**Pupil** - A hole in the centre of the iris. It is controlled by the muscles of the iris and changes size depending on the brightness of the light.

**Receptor** - A cell or organ that recognises the stimulus.

**Reflex arc** - The pathway of neurones involved in a reflex action. Reflex actions are automatic, fast responses that may be protective. The reflex arc includes:

stimulus → sensory → sensory → relay → motor → effector → response  
receptor    neurone    neurone    neurone

**Relay neurone** - The neurone that transmits electrical impulses from the sensory neurone to the motor neurone.

**Renal artery** - The blood vessel that provides the kidney with blood.

**Renal vein** - The blood vessel that takes blood away from the kidney.

**Retina** - The layer at the back of the eye that contains light receptors and is sensitive to light.

**Selective reabsorption** - The reabsorption of useful molecules (glucose, water, mineral ions) from the nephron tubule back into the blood.

**Sclera** - The white outer layer of the eye which protects the eye.

**Sense organs** - Groups of receptor cells, which respond to specific stimuli and then relay this information as electrical impulses along neurones to the central nervous system. †

**Sensory neurone** - The neurone that detects the stimulus and transmits the electrical impulse to the relay neurone in the spinal cord.

**Shivering** - Rapid contractions of the muscles when the body is too cold. The respiration used to produce energy for the contractions also produces heat as waste.

**Short-sightedness (myopia)** - A defect of the eye where distant objects appear out of focus due to the convergence of light rays in front of the retina.



**Sweat duct** - A tube transporting sweat from the gland to the skin, where the sweat can evaporate to cool the body down.

**Sweat gland** - Glands in the skin which produce sweat when the body is too hot.

**Synapse** - The junction between two neurones (nerve cells).

**Synaptic cleft** - The space in between two neurones.

**Thyrotropin releasing hormone (TRH)** - A hormone that is produced by the hypothalamus and is released when thyroxine levels in the body are low. TRH acts on the pituitary to cause the release of TSH.

**Thyroid stimulating hormone (TSH)** - A hormone that is produced by the pituitary gland and is released in response to TRH. TSH acts on the thyroid, stimulating the release of thyroxine.

**Testes** - Two glands that are part of the male reproductive system that produce sperm and release the hormone testosterone.

**Thyroid gland** - A gland in the neck which is responsible for releasing the hormone thyroxine.

**Thyroxine** - A hormone released by the thyroid gland that controls the metabolic rate and the rate of glucose uptake during respiration. It also promotes growth. The concentrations of thyroxine are controlled by negative feedback.

**Type 1 diabetes** - A condition in which the pancreas fails to produce insulin resulting in high blood sugar levels.

**Type 2 diabetes** - A condition in which a person develops insulin resistance or doesn't produce enough insulin.

**Ureters** - Tubes which carry urine from the kidneys to the bladder for excretion.

**Urethra** - Tubes which carry out the excretion and remove the urine from the bladder.

**Urine** - A liquid produced by the kidneys to help maintain water balance. It contains mineral ions, water and urea.

**Vasoconstriction** - The narrowing of blood vessels when the body is too cold. This reduces the heat lost from the blood.

**Vasodilation** - The widening of blood vessels when the body is too hot. This increases heat loss from the blood to cool the body down.

**Vena cava** - The main vein that carries deoxygenated blood back to the heart from the body.

✦ Definition taken from: [WJEC \(Eduqas\) GCSE in Biology Specification V.3 January 2019](https://www.wjec.co.uk/media/152545/GCSE_in_Biology_Specification_V.3_January_2019.pdf)

